

CLAIM LISTING

1. (Previously Presented) A molten metal reactor including:
  - (a) a treatment chamber having a treatment chamber inlet;
  - (b) a molten reactant metal flow inducing arrangement for inducing a flow of molten reactant metal into the treatment chamber through the treatment chamber inlet;
  - (c) a feed chamber having a feed chamber outlet located adjacent to the treatment chamber inlet;
  - (d) an output chamber connected to an outlet of the treatment chamber to receive molten reactant metal and reaction products from the treatment chamber;
  - (e) a supply chamber connected to the output chamber and to the feed chamber; and
  - (f) a feed chute having a feed material inlet into the feed chamber through which a feed material to be treated in the molten reactant metal enters the feed chamber, the feed chute also having a portion extending into the feed chamber so that the feed material inlet into the feed chamber is positioned within the area defined by the feed chamber and spaced apart from the boundaries of the feed chamber.
2. (Original) The molten metal reactor of Claim 1 wherein the feed chamber outlet and the treatment chamber inlet comprise a common opening.

1     3.     (Original) The molten metal reactor of Claim 2 further including a vortex inducing  
2           arrangement for inducing a swirling flow in the feed chamber outlet.  
3

4     4.     (Original) The molten metal reactor of Claim 2 wherein the feed chamber comprises a  
5           bowl shaped chamber and the feed chamber outlet is located in substantially the center of  
6           the bowl shape at a bottom of the feed chamber.  
7

8     5.     (Original) The molten metal reactor of Claim 2 further including an impeller mounted in  
9           the feed chamber and adapted to be rotated about a substantially vertical axis.  
10

11    6.     (Original) The molten metal reactor of Claim 2 including an off-center molten reactant  
12       metal inlet to the feed chamber through which molten reactant metal is introduced into  
13       the feed chamber to induce a swirling flow in the feed chamber.  
14

15    7.     (Original) The molten metal reactor of Claim 1 wherein at least a portion of the treatment  
16       chamber is in a heat transfer relationship with the supply chamber.  
17

18    8.     (Original) The molten metal reactor of Claim 1 further including a gravity trap within the  
19       treatment chamber.  
20

9-16 Canceled

17. (Previously Presented) The molten metal reactor of Claim 1 wherein the feed material inlet into the feed chamber is positioned directly above the feed chamber outlet.

18. (Previously Presented) The molten metal reactor of Claim 1 wherein the feed chute is connected to a sealing conduit that extends to a position below a liquid reactant metal level in the feed chamber.

19. (Previously Presented) A molten metal reactor including:

- (a) a treatment chamber having a treatment chamber inlet;
- (b) a feed chamber having a feed chamber outlet located adjacent to the treatment chamber inlet;
- (c) an output chamber connected to an outlet of the treatment chamber to receive molten reactant metal and reaction products from the treatment chamber;
- (d) a molten reactant metal source connected to direct molten reactant metal into the feed chamber; and
- (e) a feed chute having a feed material inlet into the feed chamber through which a feed material to be treated with the molten reactant metal enters the feed chamber, the feed chute also having (i) a portion extending into the feed chamber so that the

1 feed material inlet into the feed chamber is positioned within the area defined by  
2 the feed chamber and is spaced apart from the boundaries of the feed chamber,  
3 and (ii) a feed material release structure for selectively releasing the feed material  
4 through the feed chute toward the feed chamber.  
5

6 20. (Previously Presented) The molten metal reactor of Claim 19 wherein the molten reactant  
7 metal source includes a supply chamber connected between the output chamber and the  
8 feed chamber.  
9

10 21. (Previously Presented) The molten metal reactor of Claim 20 further including at least  
11 one molten metal pump for inducing a flow of molten metal from the supply chamber to  
12 the feed chamber.  
13

14 22. (Previously Presented) The molten metal reactor of Claim 19 wherein the feed material  
15 inlet into the feed chamber is positioned directly above the feed chamber outlet.  
16

17 23. (Previously Presented) The molten metal reactor of Claim 22 wherein the feed chute  
18 extends substantially vertically.  
19

1     24.     (Previously Presented) The molten metal reactor of Claim 19 wherein the feed chute is  
2             connected to a sealing conduit that extends to a position below a liquid reactant metal  
3             level in the feed chamber.

4  
5     25.     (Previously Presented) The molten metal reactor of Claim 19 wherein a portion of the  
6             feed chute extends transversely through the feed chamber in a direction from one lateral  
7             side of the feed chamber toward an opposite lateral side of the feed chamber.

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9     26-28. Canceled